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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/474,916	12/29/1999	YOSHIAKI NANKO	SIC-99-036	2926

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EXAMINER	
CHARLES, MARCUS	

ART UNIT	PAPER NUMBER
3682	

DATE MAILED: 12/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/474,916	NANKO ET AL.	
	Examiner	Art Unit	
	Marcus Charles	3682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36,38,39 and 41-48* is/are pending in the application.

4a) Of the above claim(s) *3,5,11-13 and 16-18, 26-30, 33 and 34* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,6-10,15,19-25,31,32,35,36,38,39 and 41-48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

This action is responsive to the RCE and amendment filed 9/22/2003, which has been entered. Claims 1-36, 38-39 and 41-48 are currently pending.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 38 and 46 are rejected under 35 U.S.C. 102(b) as being anticipated by UK(4599). UK(4599) discloses a drive mechanism comprising a crank arm (D, B' , B) having a crank axle hole (B) around a rotational axis, a drive member (20) non-rotatably fixed to the crank arm, and including an abutment facing a forward rotational direction and a slop extending from the radially outer surface of the abutment and facing a rearward rotational direction and the drive member is not used to couple sprockets to the crank arm. It is apparent that the abutment rotates around the rotational axis at a substantially constant radius. It is also apparent that the drive member is used to couple the Sleeve C to the crank arm but does not couple the sprocket to the crank arm. The sprocket is coupled to the sleeve.

Regarding claim 46, it is apparent that the abutment has a free space in front of it sufficient to allow the abutment to engage the coupling member (21).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-2, 4, 8-12, 14-15, 19-20, 31, 39 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over UK(4599) in view of FR(1,028,488). In claims 1, 31 and 47, UK(4599) discloses a drive mechanism comprising a crank arm (fig. 1) having a crank axle hole (B) around a rotational axis, a drive member (20) supported coaxially with the rotational axis, and including an abutment facing a forward rotational direction and a first slop extending from the radially outer surface of the abutment and facing a rearward rotational direction and the drive member is not used to couple sprockets to the crank arm during pedaling. (UK94599) does not disclose that the crank arm has an axle-mounting hole and a plurality of splines in the crank axle mounting holes. It is well known in the art to provide a crank arm with an axle-mounting hole having splines so as to facilitate easy removal and assembling of the drive system. FR(1,028,488) discloses a crank arm that includes crank axle mounting hole with splines in order to facilitate quick and easy dismantling and assembling of the drive system. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the crank arm of UK(4599) so as to include an axle mounting hole having splines in view of FR(1,028,488) in order to facilitate quick and easy dismantling and assembling of the drive system.

In claim 2, note the first abutment surface is perpendicular to the outer peripheral surface of the crank arm.

In claims 4 and 10, note the drive member (20) is coaxial with the rotational axis.

In claims 6 and 14, note the drive member (20) is an annular drive ring.

In claim 8, note the drive member includes a second abutment surface and a second slop

In claim 9, note the first abutment surface is 180 degrees from the second abutment (see drawing illustration attached).

In claims 12 and 15, note the first and second abutment surfaces are substantially perpendicular to the outer peripheral surface of the crank arm.

In claim 19-20, note, the pedal mounting hole at the opposite ends of the right side crank arm and in one piece with the crank arm

In claim 39, note the first abutment extends radially outwardly.

Regarding claims 41 and 44, it is apparent that the abutment has a free space in front of it sufficient to allow the abutment to engage the coupling member (21).

Claims 32 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over UK94599) in view of FR(1,028,488). UK94599) discloses the claimed invention except that the outer peripheral surface that intersect the radial inner portion of the abutment surface, extend for at least 20°. It would have been a matter of obvious design choice to one of ordinary skill in the art at the time of the invention to modify the peripheral surface such that the abutment surface extends at an angle of at least 20°, since applicant has not disclosed that having the surface extend for at any specified

angle solves any stated problem or is for any particular purpose and it appears that the abutment surface would perform equally well with a surface extending at any angle that falls within a desirable specified range.

5. Claims 21-25, 43 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over UK(4599) in view of FR(1,028,488) as applied to claim 1 above, and further in view of Hsu. UK(4599) in view of FR(1,028,488) discloses the claimed invention as in paragraph 4 above, except for a large and small diameter sprocket retained to a sprocket-mounting member of the crank axle and shift assist mechanism on the larger sprocket. Hsu discloses a sprocket mounting member (not labeled) which has a large and small diameter sprocket (1, 2) retained to the sprocket member and a shift assist mechanism (13) on the larger sprocket in order to cause the chain to run smoothly from the large to the small sprockets during gear down. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to further modify UK(4599) device to include the limitations of Hsu in order to cause the chain to run smoothly from the large to the small sprockets during gear down.

Regarding claim 48, it is apparent that the drive member can be viewed when the drive member is viewed in the direction along inwardly of the sprocket-mounting member.

Regarding claim 43, it is apparent that the abutment has a free space in front of it sufficient to allow the abutment to engage the coupling member (21).

Claims 35 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable

over UK(4599) in view of FR(1,028,488) and Liu('503). UK(4599) and FR(1,028,488) disclose the claimed invention as in paragraph 4 above, except for the drive member (crank axle mounting boss) includes only two abutments disposed on the outer surface. Liu discloses a crank axle having a boss (20) that includes only two abutments (252, 262) in order to reduce the weight and manufacturing cost. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the drive member of UK(4599) so as to have two abutments in view of Liu in order to reduce the weight and manufacturing cost of the drive system.

Regarding claim 45, it is apparent that the abutment has a free space in front of it sufficient to allow the abutment to engage the coupling member (21).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over UK(4599) in view of Yang. UK(4599) discloses a drive mechanism comprising a crank arm (B) which includes a rotational axis, a drive member which comprises an annular ring (20) with an abutment facing a forward rotational direction, a first sloped surface extending from a radially outer portion of the abutment and facing a rearward rotational direction and the drive member is not used to couple sprockets to the crank arm. UK(4599) does not disclose the inner peripheral surface of the ring has is a drive ring with splines that engage the plurality of splines of the crank arm. Yang discloses a drive ring (161) includes a plurality of splines that engage a plurality of splines in a crank arm (10) in order to allow the ring and the arm to rotate in unison and to allow for easy dismantling and assembling with out the use a additional tools. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify UK(4599)

device to include a plurality of splines in view of Yang in order to allow the ring and the arm to rotate in unison and to allow for easy dismantling and assembling without the use a additional tools.

Regarding claim 42, it is apparent that the abutment has a free space in front of it sufficient to allow the abutment to engage the coupling member (21).

Response to Arguments

3. Applicant's arguments filed 09-22-2003 have been fully considered but they are not persuasive. In respond to the argument/ amendment that the drive member is not used to couple the sprocket to the crank arm during pedaling. It should be noted that the drive member of UK(4599) is used to couple the sleeve C with the crankarm. The sprockets are couple to the sleeve and the sleeve is coupled to the crank arm. It is true that the drive member couples the sleeve to the crank arm thus causing the sprockets to rotate in unison with the crankarm. See figs. 6 and 7. However, the action/relationship of the drive member and the crankarm does not change during pedaling.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marcus Charles whose telephone number is (703) 305-6877. The examiner can normally be reached on Monday -Thursday 7:30 am-600 pm.

Marcus Charles
Primary Examiner
Art Unit 3682
November 24, 2003